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By Hyacinth L. Motegana

PATENT

Attorney Docket No. 015389-002950US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	
	)	
Thomas R. Cech et al.	)	Examiner: Not Assigned
	)	
Serial No.: 08/974,584	)	Art Unit: 1643
	)	
Filed: November 19, 1997	)	
	)	INFORMATION DISCLOSURE
For: TELOMERASE REVERSE	)	STATEMENT UNDER
TRANSCRIPTASE	)	<u>37 C.F.R. § 1.97 and § 1.98</u>
	)	

Assistant Commissioner for Patents  
Washington, D.C. 20231

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Enclosed for filing in the above-referenced application is a copy of the Form PTO-1449, submitted under 37 C.F.R. § 1.97 and § 1.98, relating to the parent application U.S. Application Serial No. (USSN) 08/854,050, filed May 9, 1997, and related application USSN 08/724,643, filed October 1, 1996, both prior applications to which the above-referenced application claims priority. The references cited therein are incorporated by reference herein, pursuant to 37 C.F.R. § 1.98(d).

It is respectfully requested that the cited information be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

The references listed in the form PTO Form-1449 are not being provided pursuant to 37 C.F.R. § 1.98(d). Copies of references listed on sheets 1 to 5 of the attached form PTO-1449 (references AA-EA) were previously submitted in prosecution of copending application



G.P. 1643  
He/

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U.S.S.N. 08/724,643. Copies of references listed on sheet 6 of the attached form PTO-1449 (references FA-FR) were previously submitted in prosecution of copending application U.S.S.N. 08/854,050. Applicants believe that no additional copies of the references are required to be submitted and that additional submission of references would be cumbersome for the Office; however, Applicants will provide additional copies at the request of the Examiner.

The relationship between the aforementioned U.S.S.N. 08/854,050, U.S.S.N. 08/724,643, and the present application is as follows:

The present application is a Continuation-In-Part application ("CIP") of PCT/US97/17618, filed October 1, 1997, and PCT/US97/17885, filed October 1, 1997, which are continuation-in-part applications of USSN 08/911,312, filed August 14, 1997, and USSN 08/912,951, filed August 14, 1997, and USSN 08/915,503, filed August 14, 1997, which are continuation-in-part applications of USSN 08/854,050, filed May 9, 1997, which is a continuation-in-part application of USSN 08/851,843, filed May 6, 1997, which is a continuation-in-part application of USSN 08/846,017, filed April 25, 1997, which is a continuation-in-part application of USSN 08/844,419, filed April 18, 1997, which is a continuation-in-part application of USSN 08/724,643, filed on October 1, 1996.

Applicants respectfully draw the Examiner's attention to the submission in copending application USSN 08/854,050 of a "Detailed Discussion of Most Closely Related References" which accompanied a "Petition to Make Special under 37 C.F.R. § 1.102(d)" filed in that application. Applicants believe that the references discussed in the "Detailed Discussion" are also related to the present application, and that the "Detailed Discussion" may be of assistance to the Examiner in the present case. For the Examiner's convenience, a copy of the "Detailed Discussion" submitted for USSN 08/854,050 is attached.

Applicants believe that no fee is required for submission of this statement, since it is being submitted prior to the first Office Action on the merits. However, if a fee is required, the

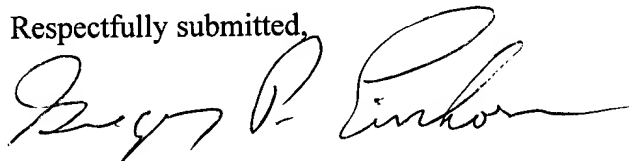
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Commissioner is authorized to charge such fee to Deposit Account No. 20-1430. Please charge any additional fees or credit any overpayment to the above-noted Deposit Account.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (415) 576-0200 or Randolph T. Apple at (650) 326-2400.

Respectfully submitted,



Gregory P. Einhorn  
Reg. No. 38,440

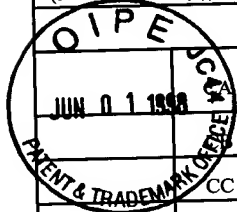
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FORM PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (Use Several Sheets If Necessary) (37 CFR § 1.98(b))				Attorney Docket No. 015389-002940		Serial No.: 08/854,050		
				Applicant: Thomas R. Cech <i>et al.</i>				
				Filing Date: 05/09/97		Group Art Unit: 1806		
U.S. PATENT DOCUMENTS								
Examiner Initials		Serial / Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date	
	AA	3,817,837	06/18/74	Tanenholtz <i>et al.</i>	195	103.5	05/14/71	
	AB	3,850,752	11/26/74	Schuurs <i>et al.</i>	195	103.5	10/29/71	
	AC	3,939,350	02/17/76	Kronick <i>et al.</i>	250	365	04/29/74	
	AD	3,996,345	12/07/76	Ullman <i>et al.</i>	424	12	06/30/75	
	AE	4,275,149	06/23/81	Litman <i>et al.</i>	435	7	11/24/78	
	AF	4,277,437	07/07/81	Maggio	422	61	12/10/79	
	AG	4,366,241	12/28/82	Tom <i>et al.</i>	435	7	08/07/80	
	AH	4,683,195	07/28/87	Mullis <i>et al.</i>	435	6	02/07/86	
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	AL	5,583,016	12/10/96	Villeponteau <i>et al.</i>	435	91.3	10/27/94	
	AM	5,489,508	02/06/96	West <i>et al.</i>	435	6	03/24/93	
FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS								
		Document Number	Publication Date	Country / Patent Office	Class	Subclass	Translation	
							Yes	No
	AN	WO 84/03564	09/13/84	PCT	G01N	33/54		
OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)								
	AO	Zakian, "Telomeres: Beginning to Understand the End," <i>Science</i> 270:1601 [1995];						
	AP	Blackburn and Gall, "A tandemly repeated sequence at the termini of the extrachromosomal ribosomal RNA genes in <i>Tetrahymena</i> ," <i>J. Mol. Biol.</i> , 120:33 [1978];						
	AQ	Oka <i>et al.</i> , "Inverted terminal repeat sequence in the macronuclear DNA of <i>Stylonychia pustulata</i> ," <i>Gene</i> 10:301 [1980];						
	AR	Klobutcher <i>et al.</i> , "All gene-sized DNA molecules in four species of hypotrichs have the same terminal sequence and an unusual 3' terminus," <i>Proc. Natl. Acad. Sci.</i> , 78:3015 [1981];						
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	AT	Biessmann <i>et al.</i> , "Addition of Telomere-Associated HeT DNA Sequences "Heals" Broken Chromosome Ends in <i>Drosophila</i> ," <i>Cell</i> 61:663 [1990];						
	AU	Sheen and Levis, "Transposition of the LINE-like retrotransposon TART to <i>Drosophila</i> chromosome termini," <i>Proc. Natl. Acad. Sci.</i> , 91:12510 [1994];						
	AV	Kipling and Cooke, "Hypervariable ultra-long telomeres in mice," <i>Nature</i> 347:400 [1990];						
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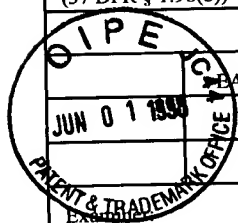
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INFORMATIONAL DISCLOSURE STATEMENT BY APPLICANT (Use Several Sheets If Necessary)		Applicant: Thomas R. Cech <i>et al.</i>	
(37 CFR § 1.98(b))		Filing Date: 05/09/97	Group Art Unit: 1806
OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)			
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BB	Wright <i>et al.</i> , "Saccharomyces telomeres assume a non-nucleosomal chromatin structure," <i>Genes Develop.</i> , 6:197 [1992];		
BC	Gottschling and Cech, "Chromatin Structure of the Molecular Ends of Oxytricha Macronuclear DNA: Phased Nucleosomes and a Telomeric Complex," <i>Cell</i> 38:501 [1984];		
BD	Blackburn and Chiou, "Non-nucleosomal packaging of a tandemly repeated DNA sequence at termini of extrachromosomal DNA coding for rRNA in <i>Tetrahymena</i> ," <i>Proc. Natl. Acad. Sci.</i> , 78:2263 [1981];		
BE	Braunstein <i>et al.</i> , "Transcriptional silencing in yeast is associated with reduced nucleosome acetylation," <i>Genes Develop.</i> , 7:592 [1993];		
BF	Makarov <i>et al.</i> , "Nucleosomal Organization of Telomere-Specific Chromatin in Rat," <i>Cell</i> 73:775 [1993];		
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BH	Watson, "Origin of concatemeric T7 DNA," <i>Nature New Biol.</i> , 239:197 [1972];		
BI	J. Olovnikov, "A theory of marginotomy: The incomplete copying of template margin in enzymic synthesis of polynucleotides and biological significance of the phenomenon," <i>J. Theor. Biol.</i> , 41:181 [1973];		
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BK	Wellinger <i>et al.</i> , "Saccharomyces Telomeres Acquire Single-Strand TG <sub>1-3</sub> Tails Late in S Phase," <i>Cell</i> 72:51 [1993];		
BL	Zahler and Prescott, "Telomere terminal transferase activity in the hypotrichous ciliate <i>Oxytricha nova</i> and a model for replication of the ends of linear DNA molecules," <i>Nucleic Acids Res.</i> , 16:6953 [1988];		
BM	Lingner <i>et al.</i> , "Telomerase and DNA End Replication: No Longer a Lagging Strand Problem?," <i>Science</i> 269:1533 [1995];		
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BO	Singer and Gottschling, "TLC1: Template RNA Component of <i>Saccharomyces cerevisiae</i> Telomerase," <i>Science</i> 266:404 [1994];		
BP	Autexier and Greider, "Functional reconstitution of wild-type and mutant <i>Tetrahymena</i> telomerase," <i>Genes Develop.</i> , 8:563 [1994];		
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BV	Wellinger <i>et al.</i> , "Origin activation and formation of single-strand TG <sub>1-3</sub> tails occur sequentially in late S phase on a Yeast linear plasmid," <i>Mol. Cell. Biol.</i> , 13:4057 [1993];		
BW	Prescott, "The DNA of ciliated protozoa," <i>Microbiol. Rev.</i> , 58:233 [1994];		
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(37 CFR § 1.98(b))			
OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)			
		Horn <i>et al.</i> , "Synthesis of oligonucleotides on cellulose. Part II: design and synthetic strategy to the synthesis of 22 oligodeoxynucleotides coding for gastric inhibitory polypeptide (GIP)," <i>Nucleic Acids Res. Symp. Ser.</i> , 225-232 [1980];	
		Roberge, <i>et al.</i> , "A strategy for a convergent synthesis of N-linked glycopeptides on a solid support," <i>Science</i> 269:202 [1995];	
	CC	Creighton, <i>Proteins, Structures and Molecular Principles</i> , WH Freeman and Co, New York NY [1983];	
	CD	Sambrook <i>et al.</i> (1989) <i>Molecular Cloning, A Laboratory Manual</i> , Cold Spring Harbor Press, Plainview NY;	
	CE	Ausubel <i>et al.</i> (1989) <i>Current Protocols in Molecular Biology</i> , John Wiley & Sons, New York NY;	
	CF	Grant <i>et al.</i> , <i>Meth. Enzymol.</i> , 153:516-544 (1987);	
	CG	Scharf D <i>et al.</i> , "Heat stress promoters and transcription factors," <i>Results Probl. Cell Differ.</i> 20:125 [1994];	
	CH	Bitter <i>et al.</i> , "Expression and secretion vectors for yeast," <i>Meth. Enzymol.</i> , 153:516 [1987];	
	CI	Wigler <i>et al.</i> , "Transfer of purified herpes virus thymidine kinase gene to cultured mouse cells," <i>Cell</i> 11:223-32 [1977];	
	CJ	Lowy <i>et al.</i> , "Isolation of transforming DNA: Cloning the hamster aprt gene," <i>Cell</i> 22:817 [1980];	
	CK	Wigler <i>et al.</i> , "Transformation of mammalian cells with an amplifiable dominant-acting gene," <i>Proc. Natl. Acad. Sci.</i> , 77:3567 [1980];	
	CL	Colbere-Garapin <i>et al.</i> , "A new dominant hybrid selective marker for higher eukaryotic cells," <i>J. Mol. Biol.</i> , 150:1 [1981];	
	CM	Murry, <i>In McGraw Hill Yearbook of Science and Technology</i> , McGraw Hill, New York NY, pp 191-196, [1992];	
	CN	Hartman and Mulligan, "Two dominant-acting selectable markers for gene transfer studies in mammalian cells," <i>Proc. Natl. Acad. Sci.</i> , 85:8047 [1988];	
	CO	Rhodes <i>et al.</i> , "Transformation of maize by electroporation of embryos," <i>Meth. Mol. Biol.</i> , 55:121 [1995];	
	CP	Hampton <i>et al.</i> , <i>Serological Methods a Laboratory Manual</i> , APS Press, St Paul MN [1990];	
	CQ	Maddox <i>et al.</i> , "Elevated serum levels in human pregnancy of a molecule immunochemically similar to eosinophil granule major basic protein," <i>J. Exp. Med.</i> , 158:1211 [1983];	
	CR	Merrifield, "Solid phase peptide synthesis. I. The synthesis of a tetrapeptide," <i>J. Am. Chem. Soc.</i> , 85:2149 [1963];	
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	CT	Kosbor <i>et al.</i> , "The production of monoclonal antibodies from human lymphocytes," <i>Immunol Today</i> 4:72 [1983];	
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	CV	Cole <i>et al.</i> , "The EBV-hybridoma technique and its application to human lung cancer," <i>Monoclonal Antibodies and Cancer Therapy</i> , Alan R Liss Inc, New York NY, pp 77-96 [1985];	
	CW	Orlandi <i>et al.</i> , "Cloning immunoglobulin variable domains for expression by the polymerase chain reaction," <i>Proc. Natl. Acad. Sci.</i> , 86:3833 [1989];	
	CX	Winter and Milstein, "Man-made antibodies," <i>Nature</i> 349:293 [1991];	
	CY	Huse <i>et al.</i> , "Generation of a large combinatorial library of the immunoglobulin repertoire in phage lambda," <i>Science</i> 246:1275 [1989];	
	CZ	Melby <i>et al.</i> , "Quantitative measurement of human cytokine gene expression by polymerase chain reaction," <i>J. Immunol. Meth.</i> , 159:235 [1993];	
Examiner:		Date Considered:	
<b>EXAMINER:</b> Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			



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OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)			
	DD	Duplaa <i>et al.</i> , "Quantitative analysis of polymerase chain reaction products using biotinylated dUTP incorporation," <i>Anal. Biochem.</i> , 212:229 [1993];	
		Price, <i>Blood Rev.</i> , 7:127 [1993];	
		Trask, "Fluorescence <i>in situ</i> hybridization: applications in cytogenetics and gene mapping," <i>Trends Genet</i> 7:149 [1991];	
	DE	Verma <i>et al.</i> , <i>Human Chromosomes: A Manual of Basic Techniques</i> , Pergamon Press, New York NY [1988];	
	DF	1994 Genome Issue of Science (265:1981f);	
	DG	Hudson <i>et al.</i> , "An STS-based map of the human genome," <i>Science</i> 270:1945 [1995];	
	DH	Whitehead Institute/MIT Center for Genome Research, Genetic Map of the Mouse, Database Release 10, April 28, 1995;	
	DI	Nielsen <i>et al.</i> , "Peptide nucleic acids (PNAs): Potential antisense and anti-gene agents," <i>Anticancer Drug Des.</i> 8:53-63 [1993];	
	DJ	Dieffenbach and Dveksler, <i>PCR Primer, a Laboratory Manual</i> , Cold Spring Harbor Press, Plainview NY [1995];	
	DK	Anderson and Young, "Quantitative Filter Hybridization," in <i>Nucleic Acid Hybridisation</i> pp 73-111 (1985);	
	DL	Coombs, <i>Dictionary of Biotechnology</i> , Stockton Press, New York NY [1994];	
	DM	Swanton <i>et al.</i> , "Arrangement of Coding and Non-coding Sequences in the DNA Molecules Coding for rRNAs in <i>Oxytricha</i> sp.," <i>Chromosoma</i> 77:203 [1980];	
	DN	Bradford, "A Rapid and Sensitive method for the Quantitation of Microgram Quantities of Protein Utilizing the Microgram Quantities of Protein Utilizing the Principle of Protein-Dye Binding," <i>Anal. Biochem.</i> , 72:248 [1976];	
	DO	Zaug <i>et al.</i> , "Catalysis of RNA Cleavage by a Ribozyme Derived from the Group I Intron of <i>Anabaena</i> Pre-tRNA <sup>Leu</sup> ," <i>Biochemistry</i> 33:14935 [1994];	
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	DQ	Calvio <i>et al.</i> , "Identification of hnRNP P2 as TLS/FUS using electrospray mass spectrometry," <i>RNA</i> 1:724 [1995];	
	DR	Sanger <i>et al.</i> , "DNA sequencing with chain-terminating inhibitors," <i>Proc. Natl. Acad. Sci.</i> , 74:5463 [1977];	
	DS	Collins <i>et al.</i> , "Purification of Tetrahymena telomerase and cloning of genes encoding the two protein components of the enzyme," <i>Cell</i> , 81: 677 (1995);	
	DT	Lendvay <i>et al.</i> , "Senescence mutants of <i>Saccharomyces cerevisiae</i> with a defect in telomere replication identify three additional EST genes," <i>Genetics</i> 144 (1996);	
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	DZ	Gottschling and Zakian, "Telomere proteins: specific recognition and protection of the natural termini of Oxytricha macronuclear DNA," <i>Cell</i> 47: 195 (1986);	
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Lingner <i>et al.</i> , "Reverse transcriptase motifs in the catalytic subunit of telomerase," <i>Science</i> 276: 561 (1997).			
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Examiner Initials	Serial / Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date	
FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS							
	Document Number	Publication Date	Country / Patent Office	Class	Subclass	Translation	
						Yes	No
	FA	WO 96/12811	05/02/96	PCT	C12N	15/54	
	FB	WO 96/40868	12/19/96	PCT	CN12	5/00	
	FC	WO 96/19580	06/27/96	PCT	CN12	15/54	
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OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)							

	FG	Nakayama et al., 1997, "TLP1: A Gene Encoding a Protein Component of Mammalian Telomerase Is a Novel Member of WD Repeats Family" <i>Cell</i> 88:875-84
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	FK	Lingner et al., 1996, "Purification of telomerase from <i>Euplotes aediculatus</i> : requirement of a primer 3' overhang" <i>Proc. Natl. Acad. Sci. USA</i> 93:10712
	FL	Nakamura et al., 1997, "Telomerase Catalytic Subunit Homologs from Fission Yeast and Human," <i>Science</i> 277: 955.
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	FO	Kilian et al., 1997, "Isolation of a candidate human telomerase catalytic subunit gene, which reveals complex splicing patterns in different cell types," <i>Hum. Mol. Genet.</i> 6:2011-2019.
	FP	Harrington et al., 1997, "Human telomerase contains evolutionarily conserved catalytic and structural subunits," <i>Genes Dev.</i> 11:3109-3115.
	FQ	Weinrich et al., 1997, "Reconstitution of human telomerase with the template RNA component hTR and the catalytic protein subunit hTRT," <i>Nat. Genet.</i> 1997 Dec 1; 17(4): 498-502.
	FR	Bodnar et al., 1998, "Extension of Life-Span by Introduction of Telomerase into Normal Human Cells," <i>Science</i> 279:349-352.
Examiner:		Date Considered:
<b>EXAMINER:</b> Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		

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